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(54) **COATING CARRIER ASSEMBLY AND COATING DEVICE**

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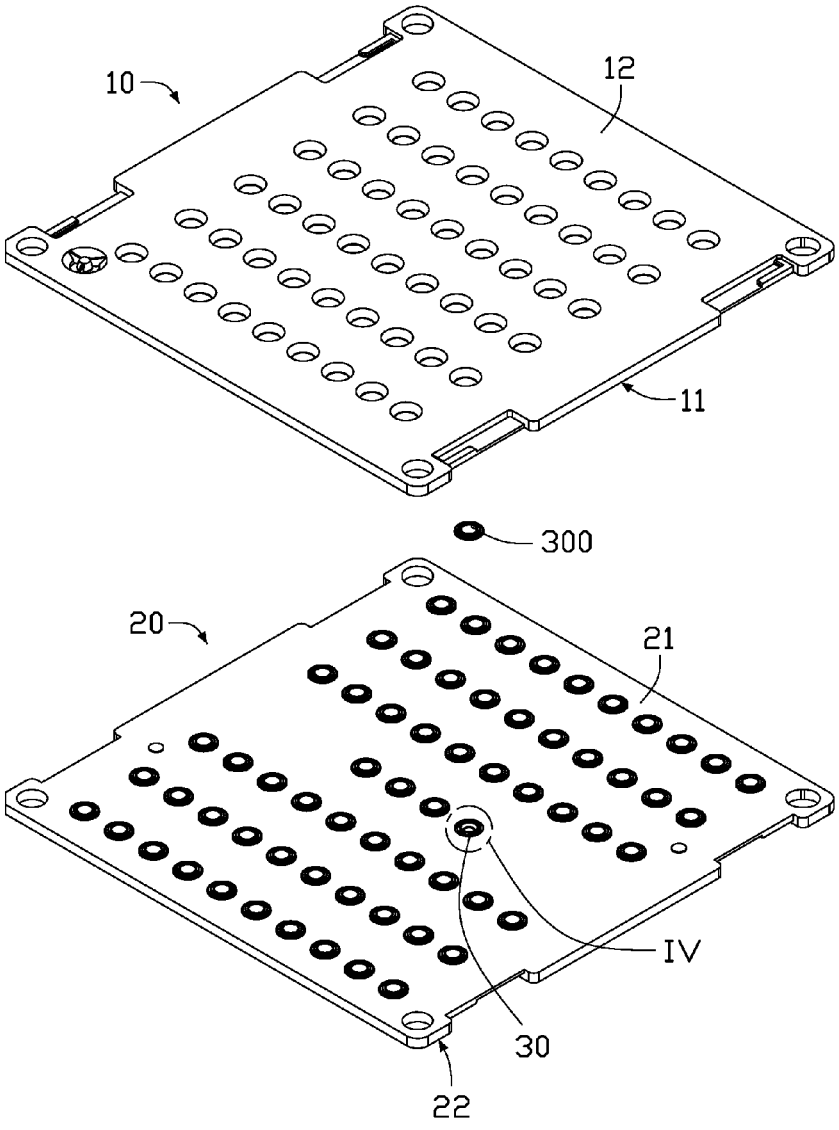
(57) **ABSTRACT**

A coating carrier assembly for supporting a to-be-plated component includes at least one supporting unit. Each of the at least one supporting unit includes a first supporting portion, a second supporting portion, and at least two ribbed plates. An annular groove is defined between the first supporting portion and the second supporting portion. The at least two ribbed plates are formed in the annular groove and connected to the first supporting portion and the second supporting portion. Each of the at least two ribbed plates comprises an overflow plating groove facing the to-be-plated component. The overflow plating groove is connected to the annular groove. The disclosure also relates to a coating device. The coating carrier assembly and the coating device can obtain a coating without shielding traces.



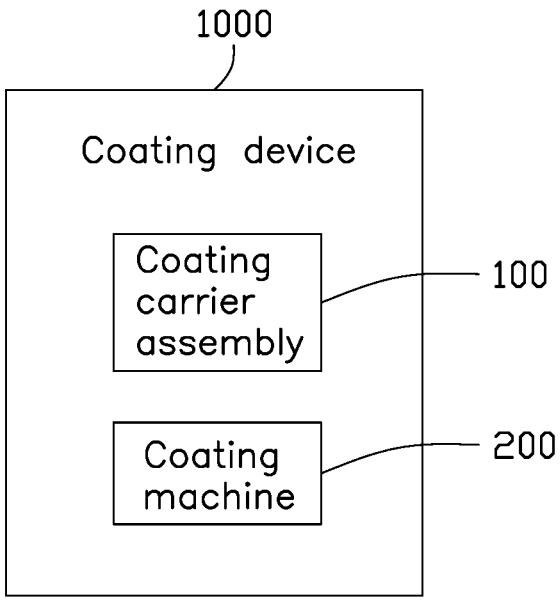

1000
Coating device
Coating carrier assembly
100
Coating machine
200

FIG. 1

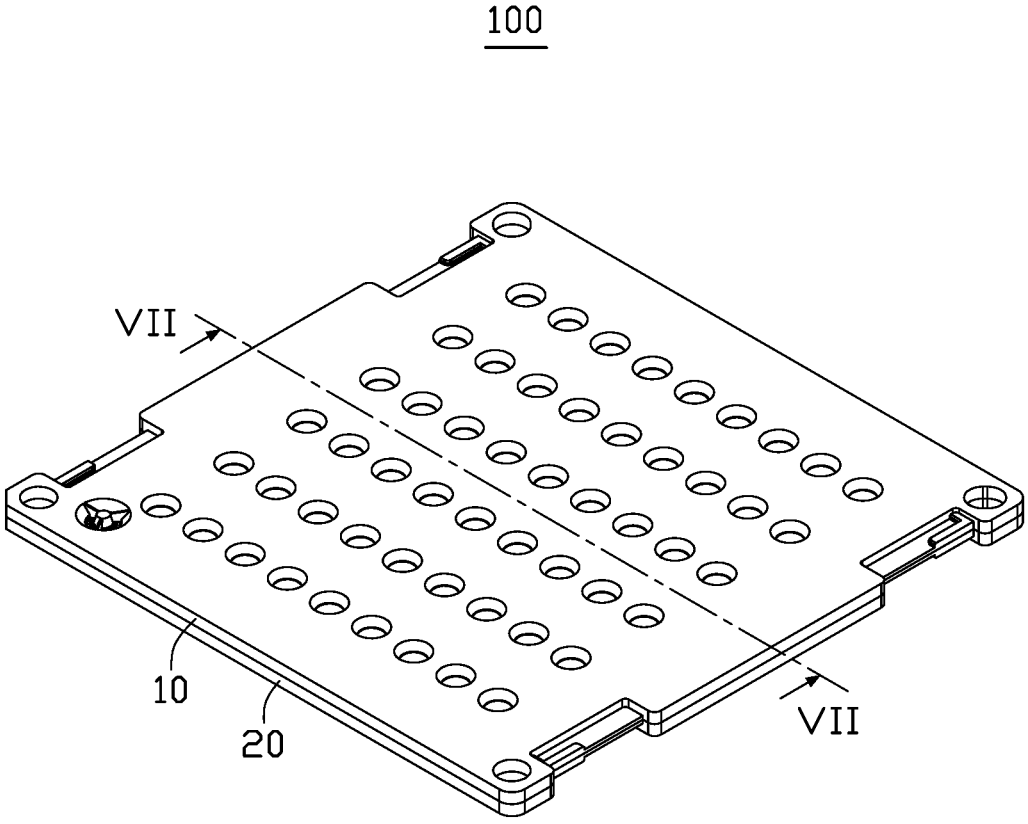


FIG. 2

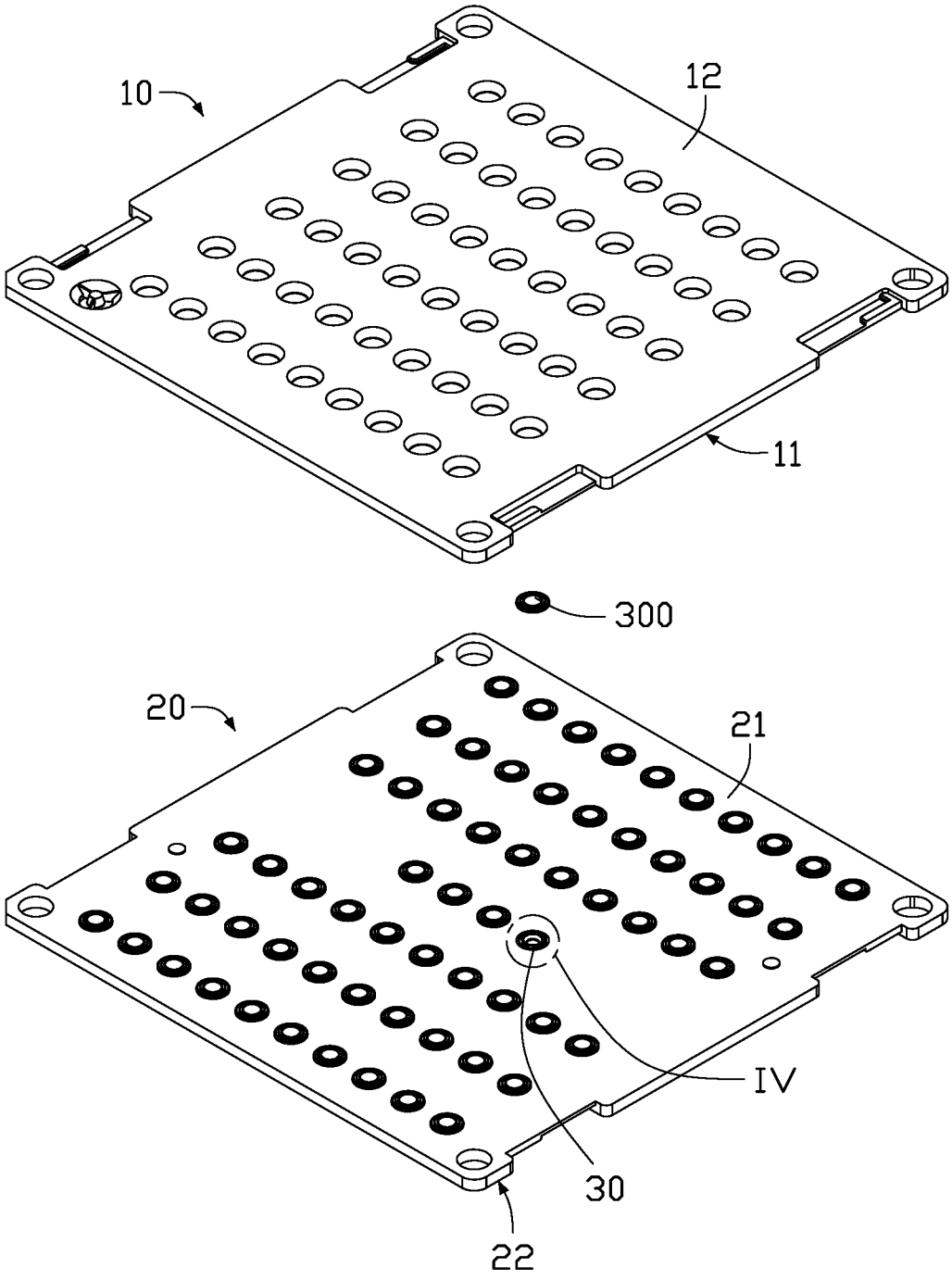


FIG. 3

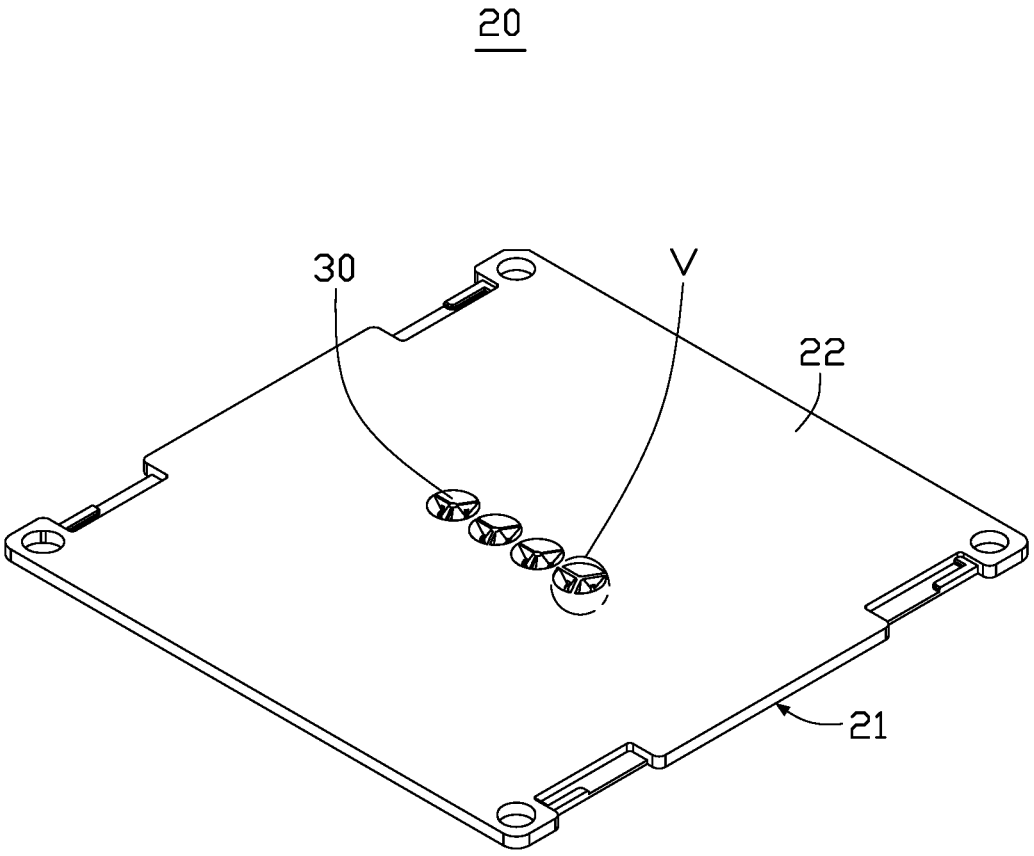


FIG. 4

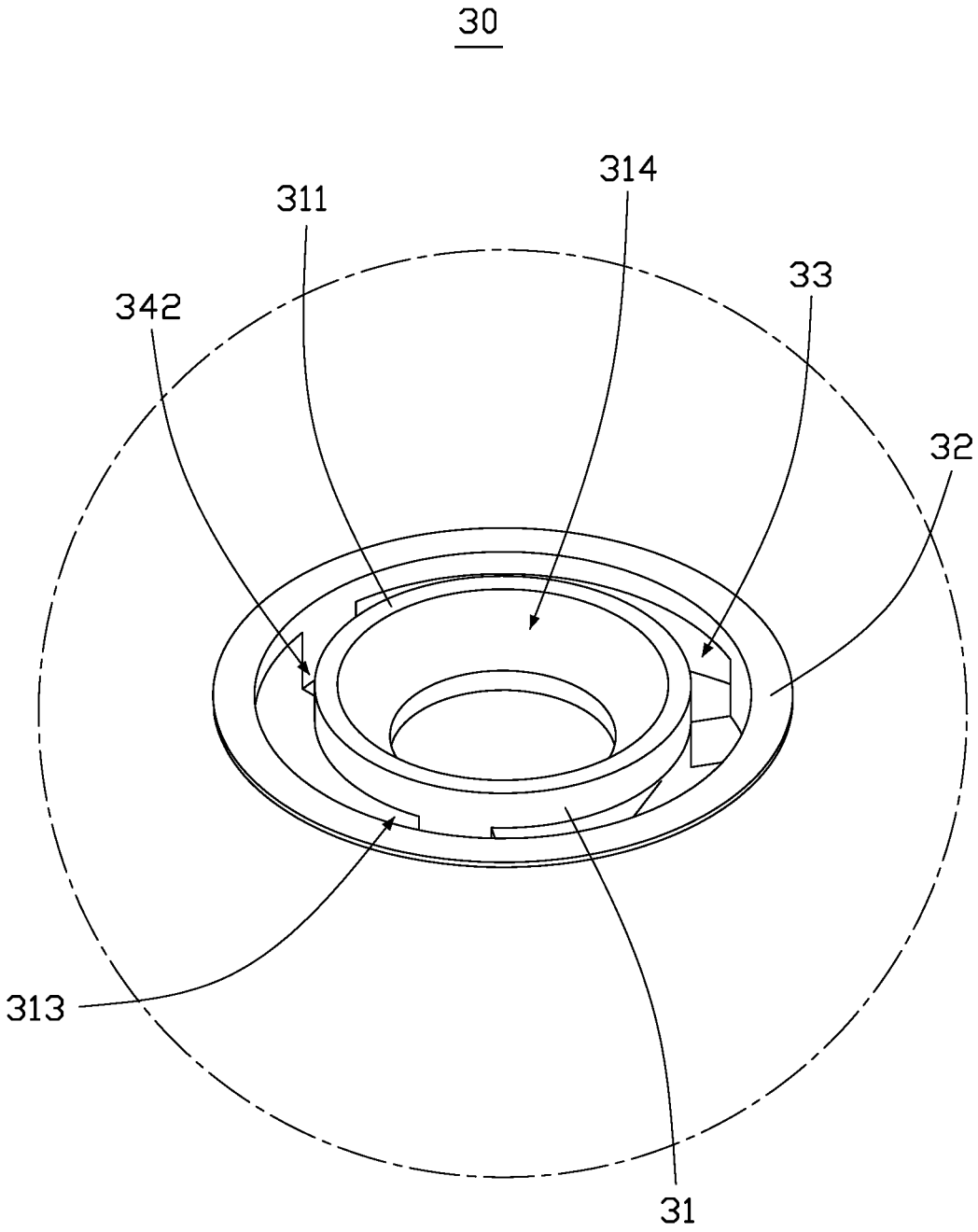


FIG. 5

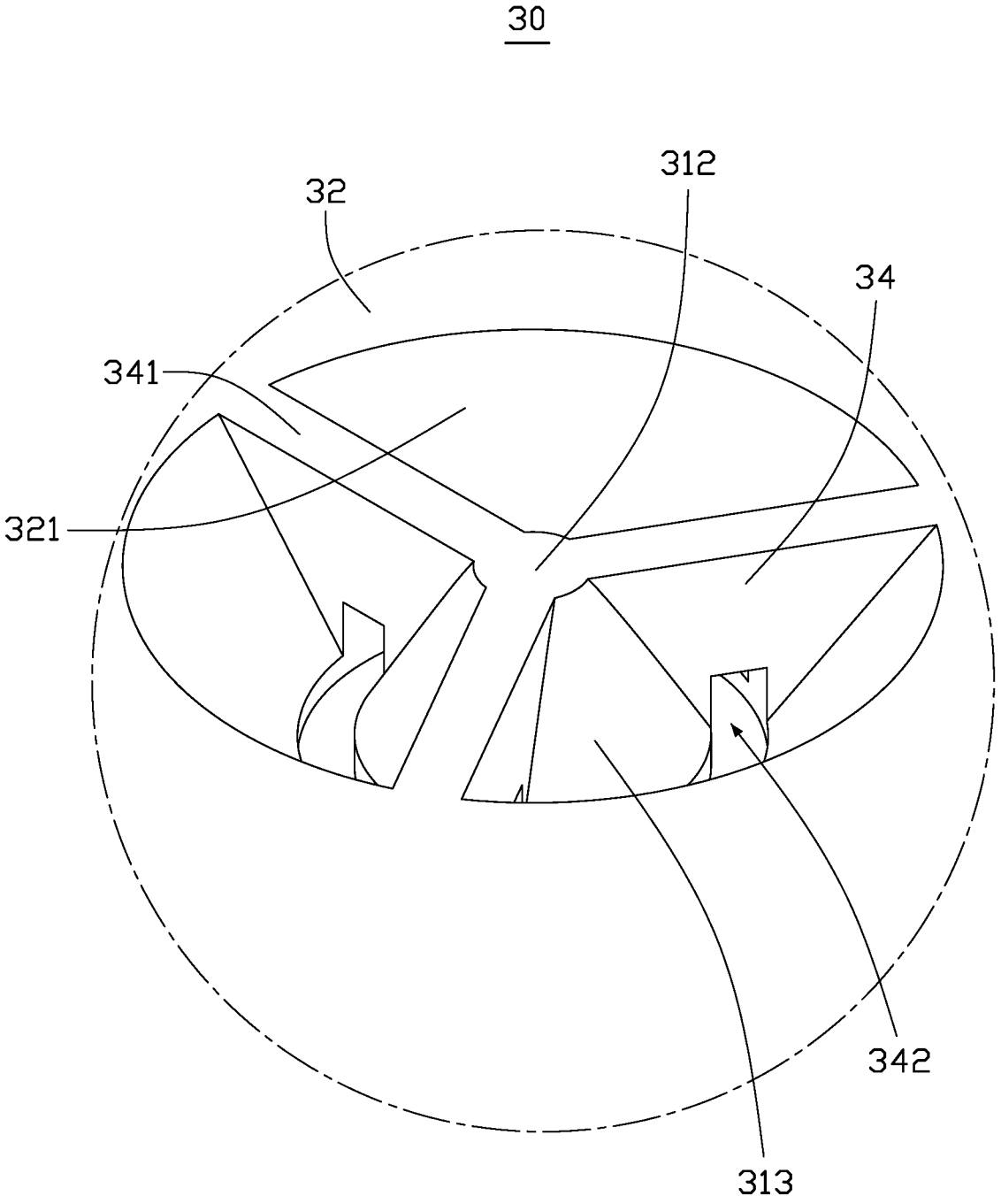


FIG. 6

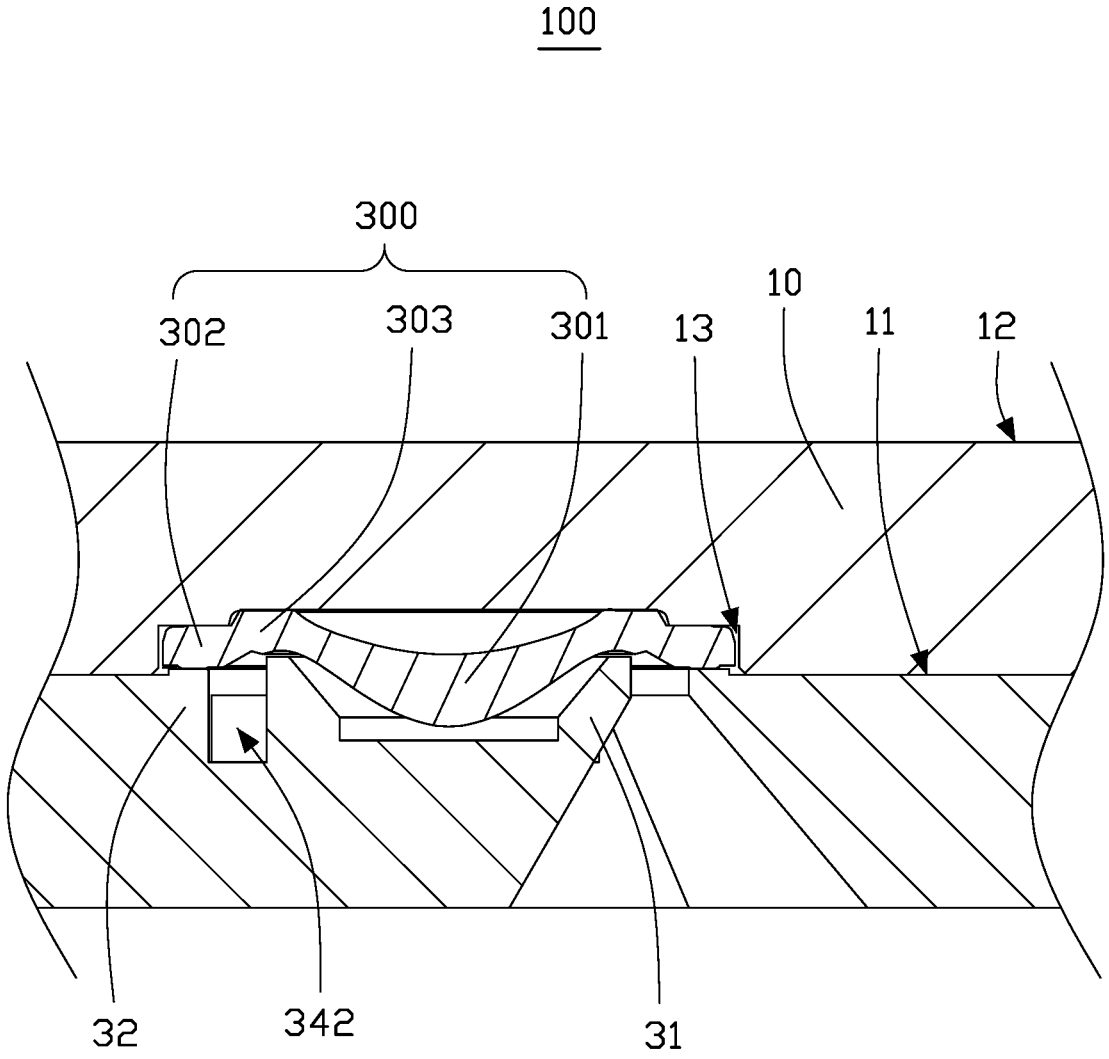


FIG. 7

COATING CARRIER ASSEMBLY AND COATING DEVICE

FIELD

[0001] The present disclosure relates to a coating carrier assembly and a coating device using the coating carrier assembly.

BACKGROUND

[0002] In a lens module, in order to solve imaging problems such as flare caused by stray light, a black film is often plated on a non-central area of a lens by a coating machine. The black film is ring-shaped. However, masking marks are often occurred in the black film by ribbed plate. The masking marks may cause the non-center area of the lens not to be coated with the black film, thereby failing to completely solve imaging problems such as flare caused by stray light.

[0003] Therefore, there is room for improvement in the art.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] Implementations of the present disclosure will now be described, by way of embodiments, with reference to the attached figures.

[0005] FIG. **1** is a module view of an embodiment of a coating device according to the present disclosure.

[0006] FIG. **2** is a perspective view of a coating carrier assembly of the coating device of FIG. **1**.

[0007] FIG. **3** is an exploded view of the coating carrier assembly of FIG. **2**.

[0008] FIG. **4** is a perspective view of a supporting plate and supporting units of the coating carrier assembly of FIG. **3**.

[0009] FIG. **5** is an enlarged view of a supporting unit of FIG. **3**.

[0010] FIG. **6** is an enlarged view of a supporting unit of FIG. **4**.

[0011] FIG. **7** is a cross-sectional view of a supporting unit of FIG. **2**.

DETAILED DESCRIPTION OF EMBODIMENTS

[0012] It will be appreciated that for simplicity and clarity of illustration, where appropriate, reference numerals have been repeated among the different figures to indicate corresponding or analogous elements. In addition, numerous specific details are set forth in order to provide a thorough understanding of the embodiments described herein. However, it will be understood by those of ordinary skill in the art that the embodiments described herein can be practiced without these specific details. In other instances, methods, procedures, and components have not been described in detail so as not to obscure the related relevant feature being described. Also, the description is not to be considered as limiting the scope of the embodiments described herein. The drawings are not necessarily to scale and the proportions of certain parts have been exaggerated to better illustrate details and features of the present disclosure

[0013] Several definitions that apply throughout this disclosure will now be presented.

[0014] The term "comprising," when utilized, means "including, but not necessarily limited to"; it specifically indicates open-ended inclusion or membership in the so-described combination, group, series, and the like.

[0015] FIGS. **1** and **7** show an embodiment of a coating device **1000**. The coating device **1000** is used to plate a coating on a to-be-plated component **300**. The to-be-plated component **300** includes a convex portion **301** and an edge portion **302**. The edge portion **302** surrounds the convex portion **301** and is connected to the convex portion **301**. A coating area **303** is defined on the edge portion **302**.

[0016] Referring to FIG. **1**, the coating device **1000** includes a coating carrier assembly **100** and a coating machine **200**. The coating machine **200** faces the coating carrier assembly **100**. The coating carrier assembly **100** is used to support and fix the to-be-plated component **300**. The coating machine **200** is used to form a coating on the to-be-plated component **300**. In at least one embodiment, the coating is a ring-shaped black film.

[0017] The coating carrier assembly **100** includes a supporting plate **20**. The to-be-plated component **300** is formed on the supporting plate **20**.

[0018] The supporting plate **20** includes a first surface **21** and a second surface **22** opposite to the first surface **21**.

[0019] The coating carrier assembly **100** further includes at least one supporting unit **30** formed in the supporting plate **20** in an array.

[0020] Each of the at least one supporting unit **30** includes a first supporting portion **31**, a second supporting portion **32**, and at least two ribbed plates **34**. An annular groove **33** is defined between the first supporting portion **31** and the second supporting portion **32**. The at least two ribbed plates **34** are formed in the annular groove **33** and connected to the first supporting portion **31** and the second supporting portion **32**. Each of the at least two ribbed plates **34** includes an overflow plating groove **342**. The overflow plating groove **342** has an opening that faces the to-be-plated component **300**. The overflow plating groove **342** is connected to the annular groove **33**.

[0021] The first supporting portion **31** includes a third surface **311**, a fourth surface **312** opposite to the third surface **311**, and an outer surface **313** connected to the third surface **311** and the fourth surface **312**. A size of the third surface **311** is larger than that of the fourth surface **312**. The outer surface **313** is tapered. A size of an end of the outer surface **313** facing the to-be-plated component **300** is larger than a size of an end of the outer surface **313** away from the to-be-plated component **300**.

[0022] The first supporting portion **31** further includes a first receiving groove **314**. The first receiving groove **314** is recessed from the third surface **311** to the fourth surface **312**. The convex portion **301** of the to-be-plated component **300** is received in the first receiving groove **314**.

[0023] The second supporting portion **32** includes an inner surface **321**, and the inner surface **321** is tapered. A size of an end of the inner surface **321** facing the to-be-plated component **300** is smaller than a size of an end of the inner surface **321** away from the to-be-plated component **300**. The outer surface **313** and the inner surface **321** define the annular groove **33**. The edge portion **302** of the to-be-plated component **300** is formed on the second supporting portion **32**.

[0024] In at least one embodiment, the annular groove **33** is recessed from the first surface **21** to the second surface **22**. The annular groove **33** penetrates through the supporting plate **20**. The first supporting portion **31** and the second supporting portion **32** are both a part of the supporting plate

20. The coating machine **200** faces the annular groove **33** and is opposite to the to-be-plated component **300**.

[0025] Each of the at least two ribbed plates **34** further includes a fifth surface **341** parallel to the fourth surface **312**. The fifth surface **341** is closer to the fourth surface **312** than the third surface **311**. The overflow plating groove **342** is formed from a surface opposite to the fifth surface **341** toward the fifth surface **341**. In at least one embodiment, the fourth surface **312** is flush with the fifth surface **341**.

[0026] In at least one embodiment, a width of an end of the overflow plating groove **342** facing the to-be-plated component **300** is equal to a width of an end of the annular groove **33** facing the to-be-plated component **300**. A width of an end of the overflow plating groove **342** away from the to-be-plated component **300** may be greater than or equal to or smaller than a width of the annular groove **33** facing the to-be-plated component **300**.

[0027] The coating area **303** faces the annular groove **33** and the overflow plating groove **342**.

[0028] Referring to FIG. **3**, the coating carrier assembly **100** further includes a cover plate **10** formed on the supporting plate **20**. At least one second receiving groove **13** (shown in FIG. **7**) is defined in the cover plate **10**. The to-be-plated component **300** is received in the at least one second receiving groove **13**. A diameter of the second receiving groove **13** is larger than an outer diameter of the annular groove **33**.

[0029] The cover plate **10** includes a sixth surface **11** and a seventh surface **12** opposite to the sixth surface **11**. The second receiving groove **13** is recessed from the sixth surface **11** to the seventh surface **12**.

[0030] With the above configuration, the coating carrier assembly **100** and the coating device **1000** are provided with the annular groove **33** facing the coating area **303** of the to-be-plated component **300** between the first supporting portion **31** and the second supporting portion **32**, and the overflow plating groove **342** facing the coating area **303** of the to-be-plated component **300** is formed on the at least two ribbed plates **34**. Plating liquid from the coating machine **200** can be sprayed on the coating area **303** of the to-be-plated component **300** through the annular grooves **33** between different ribbed plates **34** and on the coating area **303** covered by the ribbed plate **34** through the overflow plating groove **342**, so as to obtain a coating without shielding traces. Furthermore, the coating carrier assembly **100** and the coating device **1000** can save costs and improve imaging quality of a camera module.

[0031] The embodiments shown and described above are only examples. Even though numerous characteristics and advantages of the present technology have been set forth in the foregoing description, together with details of the structure and function of the present disclosure, the disclosure is illustrative only, and changes may be made in the detail, including matters of shape, size, and arrangement of the parts within the principles of the present disclosure, up to and including the full extent established by the broad general meaning of the terms used in the claims. It will therefore be appreciated that the embodiments described above may be modified within the scope of the claims.

What is claimed is:

1. A coating carrier assembly for supporting a to-be-plated component, comprising:

at least one supporting unit, wherein each of the at least one supporting unit comprises:

a first supporting portion,

a second supporting portion, wherein an annular groove is defined between the first supporting portion and the second supporting portion;

at least two ribbed plates, wherein the at least two ribbed plates are formed in the annular groove and connected to the first supporting portion and the second supporting portion; each of the at least two ribbed plates comprises an overflow plating groove facing the to-be-plated component; and the overflow plating groove is connected to the annular groove.

2. The coating carrier assembly of claim **1**, wherein a width of an end of the overflow plating groove facing the to-be-plated component is equal to a width of an end of the annular groove facing the to-be-plated component.

3. The coating carrier assembly of claim **1**, wherein the second supporting portion comprises an inner surface being tapered; a size of an end of the inner surface facing the to-be-plated component is smaller than a size of an end of the inner surface away from the to-be-plated component.

4. The coating carrier assembly of claim **3**, wherein the first supporting portion comprises an outer surface being tapered; a size of an end of the outer surface facing the to-be-plated component is larger than a size of an end of the outer surface away from the to-be-plated component; and the annular groove is defined by the outer surface and the inner surface.

5. The coating carrier assembly of claim **1**, wherein the to-be-plated component comprises a convex portion and an edge portion surrounding the convex portion; the edge portion is formed on the second supporting portion; the first supporting portion further comprises a first receiving groove; and the convex portion is received in the first receiving groove.

6. The coating carrier assembly of claim **5**, wherein a coating area is defined on the edge portion; and the coating area faces the annular groove and the overflow plating groove.

7. The coating carrier assembly of claim **1**, further comprising a supporting plate, wherein the at least one supporting unit is formed in the supporting plate in an array.

8. The coating carrier assembly of claim **7**, wherein the supporting plate comprises a first surface and a second surface opposite to the first surface; the annular groove is recessed from the first surface to the second surface and penetrates through the supporting plate; and the first supporting portion and the second supporting portion are both a part of the supporting plate.

9. The coating carrier assembly of claim **7**, further comprising a cover plate formed on the supporting plate; wherein at least one second receiving groove is defined in the cover plate; and the to-be-plated component is received in the at least one second receiving groove.

10. A coating device, comprising:

a coating carrier assembly comprising:

at least one supporting unit, wherein each of the at least one supporting unit comprises:

a first supporting portion,

a second supporting portion, wherein an annular groove is defined between the first supporting portion and the second supporting portion;

at least two ribbed plates, wherein the at least two ribbed plates are formed in the annular groove and connected to the first supporting portion and the

second supporting portion; each of the at least two ribbed plates comprises an overflow plating groove facing a to-be-plated component; and the overflow plating groove is connected to the annular groove; and

a coating machine, wherein the coating machine faces the annular groove and is opposite to the to-be-plated component.

11. The coating device of claim **10**, wherein a width of an end of the overflow plating groove facing the to-be-plated component is equal to a width of an end of the annular groove facing the to-be-plated component.

12. The coating device of claim **10**, wherein the second supporting portion comprises an inner surface being tapered; a size of an end of the inner surface facing the to-be-plated component is smaller than a size of an end of the inner surface away from the to-be-plated component.

13. The coating device of claim **12**, wherein the first supporting portion comprises an outer surface being tapered; a size of an end of the outer surface facing the to-be-plated component is larger than a size of an end of the outer surface away from the to-be-plated component; and the annular groove is defined by the outer surface and the inner surface.

14. The coating device of claim **10**, wherein the to-be-plated component comprises a convex portion and an edge portion surrounding the convex portion; the edge portion is formed on the second supporting portion; the first supporting portion further comprises a first receiving groove; and the convex portion is received in the first receiving groove.

15. The coating device of claim **14**, wherein a coating area is defined on the edge portion; and the coating area faces the annular groove and the overflow plating groove.

16. The coating device of claim **10**, wherein the coating device further comprises a supporting plate, and the at least one supporting unit is formed in the supporting plate in an array.

17. The coating device of claim **16**, wherein the supporting plate comprises a first surface and a second surface opposite to the first surface; the annular groove is recessed from the first surface to the second surface and penetrates through the supporting plate;

and the first supporting portion and the second supporting portion are both a part of the supporting plate.

18. The coating device of claim **16**, wherein the coating device further comprises a cover plate formed on the supporting plate; at least one second receiving groove is defined in the cover plate; and the to-be-plated component is received in the at least one second receiving groove.

* * * * *